



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,040	07/03/2003	Myung-Ryul Choi	1293.1733	4263
21171 7590 01/16/2007 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER CHEN, TIANJIE	
			ART UNIT 2627	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/612,040

Applicant(s)

CHOI ET AL.

Examiner

Tianjie Chen

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,8,9 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 and 15 is/are allowed.
- 6) ☒ Claim(s) 1,4,5,8,9,13 and 16 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Non-Final Rejection (RCE)

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/27/2006 has been entered. Claims 1, 4, 5, 8, 9, and 12-16 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 5, 8, 9, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morinaga (JP 8-203259A) in view of Park et al (US 6,859,933) and Hirasaka et al (US 6,690,540).

Claim 1, Morinaga shows a disk tray 2 for a disk drive in Fig. 5 that slides in and out of the disk drive 1, the disk tray including one or more dampers 10 mounted on a lower surface of the disk tray (Figs. 1-3) to reduce noise.

Morinaga shows that the dampers are designed for reducing noise; but does not specify the frequency.

Park et al and Hirasaka et al shows that the resonant frequency is device structure dependent. Park's device has two resonant frequencies around 60 Hz. Hirasaka's device has multiple resonant frequencies in the range of 700-1500 Hz (Column 8, lines 57-59). One of ordinary skill in the art would have been motivated to expect that Morinaga's device has resonant frequencies, which may fall in the range from 60 – 1500 Hz. Park further teaches that the resonator's frequency can be tuned (Column 6, lines 58-60) and the frequency is to match the resonant frequency of the device. One of ordinary skill in the art would have been motivated to adjust the resonator's frequency to match the resonant frequency of the device, which may fall into the range of 60-1500 Hz, which covers a range of more above 200 Hz; and the resonators selectively reduce noise of two predetermined frequency bands.

And in the above constructed device, each of the one or more resonators from Park et al includes: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of each resonator (Fig. 3); and a resonance container surrounding the through hole and having a predetermined volume; the predetermined frequency bands are inherently determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and a volume of the resonance container.

Claim 5, as described above, Morinaga and park et al show a disk drive including: a disk tray that slides in and out of the disk drive and on which a disk is placed; a disk driving portion rotating the disk at a predetermined speed, and two or more resonators installed on a lower surface of the disk tray to selectively reduce noise of two predetermined frequency bands that corresponds to dominant noise frequency bands above 200 Hz. Park further shows a disk chucking apparatus 57 holding the

Art Unit: 2627

disk on the disk driving portion; a data recording/reproducing unit 55 recording data on the disk or reproducing data from the disk and Claims 3 and 7, Park et al further shows that the resonator further includes an absorbing member (air) filling the resonance container ([0030]); and Park et al show each of the two or more resonators comprises: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of each resonator; and a resonance container surrounding the through hole and having a predetermined volume, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and a volume of the resonance container; and the resonator further includes an absorbing member (air) filling the resonance container ([0030]).

Claims 4 and 8, Park et al further shows a bottom surface of the resonance container is open (Fig. 5).

Claim 9, as described above, Morinaga and Park et al shows a resonator system having a plurality of resonator for a disk tray of a disk drive, each of the resonators including: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of the resonator; and a resonance container surrounding the through hole and having a predetermined volume, the resonator being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container, wherein each of the resonators inherently converts sound energy to thermal energy to reduce a sound pressure level of a resonance frequency to selectively absorb a specific frequency, and wherein at least two of the resonators respectively reduce noise of two different frequency bands corresponding to dominant noise frequency

Art Unit: 2627

bands above 200 Hz; at least one of the resonators further comprises an absorbing member (air) filling the resonance container to selectively reduce noise of a frequency band higher than the predetermined frequency band at 15 Hz (Fig. 7).

Claim 13, as described above, the combination of Morinaga and Park et al discloses a resonator for a disk tray of a disk drive, comprising: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of the resonator; and a resonance container surrounding the through hole and having a predetermined volume, the resonator being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container; wherein the resonator converts sound energy to thermal energy to reduce a sound pressure level of a resonance frequency to selectively absorb a specific frequency; and wherein the resonator further comprises an absorbing member filling the resonance container to selectively reduce noise of a frequency band larger than the predetermined frequency band corresponding to dominant noise frequency bands above 200 Hz.

Claim 16, the above constructed device is a disk tray for a disk drive that slides in and out of the disk drive, the disk tray comprising two or more resonators mounted on a lower surface of the disk tray to selectively reduce at least two peak sound pressure levels that are above 200 Hz, wherein the peak sound pressure levels correspond to dominant noise frequency bands; wherein at least one resonator is a Helmholtz resonator comprising an absorbing member filling a resonance container surrounding the through hole and having a predetermined volume, the resonator being mounted on the disk tray to selectively reduce noise of a predetermined

Art Unit: 2627

frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container, and wherein air in the bottle neck begins to resonate to cause interference that causing frequency cancellation for a frequency larger than the predetermined frequency band.

Allowable Subject Matter

3. Claims 14 and 15 are allowed.

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is an examiner's statement of reasons for allowance:

- With regard to claims 12, 14, and 15, as the closest reference on record, the combination of Morinaga (JP 8-203259A) and Park et al (EP 1 207 532 A2) shows a resonator having a resonance container for a disk tray, which is being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container, an absorbing member filling the resonance container to selectively reduce noise of a frequency band; the absorbing member filling the resonance container to selectively reduce noise of a frequency band higher than the predetermined frequency band; but fails to show the absorbing member filling the resonance container is a porous member or a sponge.

Art Unit: 2627

- Applicant asserts that by filling the resonance container with a porous member the high frequency noise band and the overall noise level can be reduced (Specification, [0041]).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground formed by revised reasoning cited in rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TIANJIE CHEN
PRIMARY EXAMINER